

Dimplex Electric Thermal Storage (ETS) Product Guide - Nova Scotia

Dimplex Electric Thermal Storage (ETS) Heating Product Guide

Model:
VFMQ

LI-926 2012/03



Key Homeowner Benefits

1. Lower Space & Water Heating Bills and a Quick Return on Investment

Space & water heating account for more than 75% of the typical home's energy bill. NS Power's Time-Of-Day (TOD) rates offer great savings for Off-Peak space and water heating through ETS.

- 50% less than the standard rate (6¢ vs 13¢)
- 60% less than the TOD peak rate (6¢ vs 16¢)
- *Payback of 3 – 5 years resulting in a Return on Investment (ROI) of 20% - 30% for the homeowner.*

2. Greater Comfort & Aesthetics

Combines (1) thermostat-controlled forced convection heat, with (2) radiant heating that directly heats people and objects in the room. Attractive cabinet design stores 20% more heat energy than competitive brands.



3. Environmentally Friendly

Renewable energy like wind power generates electricity around the clock but not always when it's needed. Storage heating stores extra capacity "Off-Peak" energy, allowing more efficient overall generation. To meet this challenge, Dimplex has been manufacturing storage heating since 1965.

4. Ease of Installation

No need to add duct work or piping. Most installations can be completed in a single day.

All information is subject to change

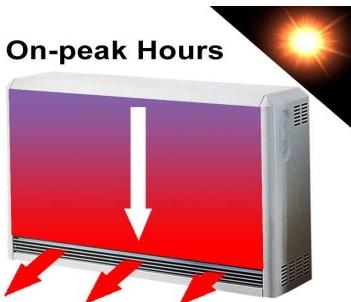
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What is Storage Heating and How Does it Work?

Storage heating uses less expensive Off-Peak electricity to store heat energy at night and then release this heat as required to keep homeowners warm on even the coldest days.

The Dimplex DCP2010 automatic charge control system includes an outdoor temperature sensor to determine how much heat to store for the next day and can be customized to meet each user's comfort needs while maximizing savings.



During the day when energy rates are expensive (16¢ per kWh), heat is released into the room.



Heat energy is collected and stored within the heater during Off-Peak periods when rates are less expensive (6¢ per kWh).

The Importance of Accurate Heat Loss Calculations

It is critical to do an accurate heat loss calculation on the area including all other energy efficiency initiatives being considered to the area's building envelope. The lower the room's heat loss:

- the smaller the physical size of the storage heater
- the smaller the element amperage, wiring, breaker and impact on the home's service capacity
- the better chance of using existing electrical wiring and the less expensive the installation

An online heat loss calculator can be found at http://www.dimplexheating.com/heat_loss_calculator.

The Need to Control Water Heating under NSPi's TOD Rate

NSPi's TOD rate is a whole-house rate and uncontrolled water heating will penalize your customer, A typical home with 2 morning showers would use about 300 kWh per month for water heating and cost:

- \$36 under NSPi's standard rate.
- **\$48 under the Peak rate or 33% more.** Even if you take a shower at 6:30, your water heater will do the vast majority of its heating after 7am during the expensive Peak rate period.
- \$18 under the Off-Peak rate if controlled by the Dimplex DCP2010 control panel.

Even if the homeowner's water heater is undersized for full-day control, it should be controlled during the Peak period and allowed to reheat during the Mid-Peak standard rate period from 12pm - 4pm. This is easily programmed through the Dimplex DCP2010 control panel.

- For new installations, an 80 gallon (300 litre) tank will store lots of low-cost hot water.

Installation Clearances & Maintenance

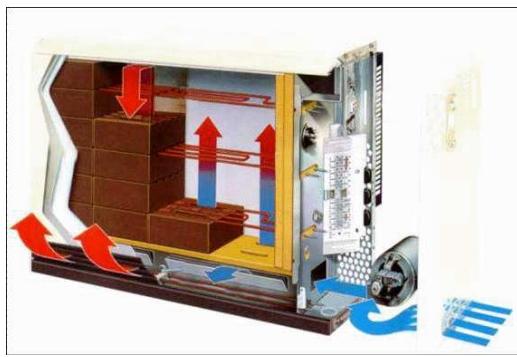
- Keep all materials off the heater at least 4" (100mm) away from the top and sides, 12" (300mm) from the front of the heater to allow the heat to properly circulate.
- We recommend that the area near the unit is cleaned periodically to reduce dust, dirt and pet hair entering the heater.

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Product Information & Maximum Maintainable Heat Loss



Complete Kit Complete Storage Heater	Separate Components		
	Storage Heater Cabinet	Element Kit	Storage Brick Boxes (3)
VFMQ20-220	1 x VFMQ20	1 x HFI220	4 x KOLLI25
VFMQ30-330	1 x VFMQ30	1 x HFI330	6 x KOLLI25
VFMQ40-440	1 x VFMQ40	1 x HFI440	8 x KOLLI25
VFMQ50-550	1 x VFMQ50	1 x HFI550	10 x KOLLI25
VFMQ60-660	1 x VFMQ60	1 x HFI660	12 x KOLLI25
VFMQ70-770	1 x VFMQ70	1 x HFI770	14 x KOLLI25

Model	Heating Element	Maximum Maintainable Heat Loss ¹ (kW)		Wire & Breaker Sizing	Empty Cabinet Weight for Transporting ³ Approximate Installed Weight ⁴	Dimensions – LxHxD (mm – inches)
		Auto 8+4	Manual 8+0 ²			
VFMQ20-220	2 kW	1.1 - 1.4	0.8 - 0.9	#14/2 15 Amp	<u>34 kg – 75 lbs.</u> 98 kg – 216 lbs.	626 x 672 x 250 mm (24 ⁵ / ₈ x 26 ¹ / ₂ x 9 ⁷ / ₈ in)
VFMQ30-330	3 kW	1.7 - 2.1	1.2 - 1.4	#12/2 20 Amp	<u>40 kg – 88 lbs.</u> 137 kg – 301 lbs.	776 x 672 x 250 mm (30 ¹ / ₂ x 26 ¹ / ₂ x 9 ⁷ / ₈ in)
VFMQ40-440	4 kW	2.1 - 2.7	1.6 - 1.8	#10/2 30 Amp	<u>46 kg – 101 lbs.</u> 176 kg – 387 lbs.	926 x 672 x 250 mm (36 ¹ / ₂ x 26 ¹ / ₂ x 9 ⁷ / ₈ in)
VFMQ50-550	5 kW	2.9 - 3.7	2.1 - 2.3	#10/2 30 Amp	<u>52 kg – 114 lbs.</u> 215 kg – 473 lbs.	1,076 x 672 x 250 mm (42 ³ / ₈ x 26 ¹ / ₂ x 9 ⁷ / ₈ in)
VFMQ60-660	6 kW	3.4 - 4.3	2.5 - 2.7	#8/2 40 Amp	<u>58 kg – 128 lbs.</u> 254 kg – 559 lbs.	1,226 x 672 x 250 mm (48 ¹ / ₄ x 26 ¹ / ₂ x 9 ⁷ / ₈ in)
VFMQ70-770	7 kW	3.8 - 4.7	2.8 - 3.1	#8/2 40 Amp	<u>64 kg – 141 lbs.</u> 293 kg – 646 lbs.	1,376 x 672 x 250 mm (54 ¹ / ₄ x 26 ¹ / ₂ x 9 ⁷ / ₈ in)

¹ Maximum Maintainable Heat Loss refers to the maximum heat loss each storage heater can meet based on NS Power's Off-Peak charge schedule and utilizing the Mid-Peak standard rate period for charging on the coldest days of the year.

² The 8+0 value should be used for all manual control heater sizing or when no additional charging is used during the Mid-Peak period and therefore controlled for 16 hours straight.

³ Empty Cabinet Weight for Transporting is the weight of the storage heater cabinet alone and packaging.

⁴ The Approximate Installed Weight includes all its components:

- the storage heater cabinet
- the element kit
- the bricks for the storage core that are three to a box

Charge Control Options

Charge controllers perform two functions:

1. Ensure that the elements charge only during the Off-Peak period.
2. Manage the amount of charge to meet the next day's heating requirements. This can be done automatically or manually by the user selecting the charge amount on each heater.

Automatic charge control is better:

- for sites with more than one heater .
- when low user involvement is desired.
- includes 4 additional relays to individually control up to 4 additional loads like water heating.
- at using the Mid-Peak period to add heat on only the coldest days and reduce each heater's size.

Manual charge control option is:

- recommended for single heater installations in areas that can handle temperature fluctuations like basements, cottages and workshops for times that the charge level is over/under set.

Automatic Charge Control - DCP2010 Charge Control Panel

Dimplex's DCP2010 Charge Control Panel can control:

- 1 to 30 VFMQ storage heaters.
- 4 additional 30 Amp loads including an electric water heater, electric in-floor heating, baseboard heaters in non-living areas and any other loads on their own circuit.



The panel is connected to:

- the NS Power meter lead wire #113397 (extra).
- the external temperature sensor by a 2m (6½ ft) cable (included) that can be extended to 30m (100 ft) by #16/2 wire.
- each storage heater wired in parallel with #14/2 wire.

Key Benefits of the Dimplex Charge Control System:

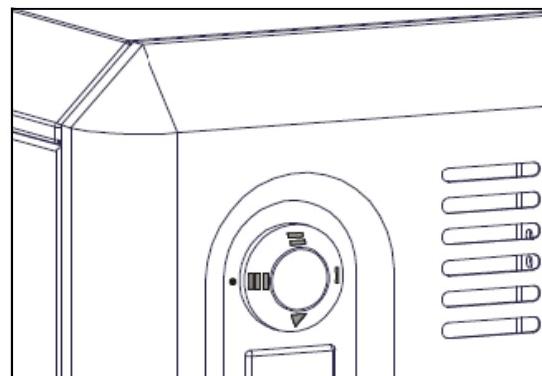
- Surge protection to surpass IEC 61000-4-5 requirements.
- 4 x 30 Amp relays initiated in sequence 5 minutes apart (or randomly over 8½ minutes) at the beginning of each charging period to reduce the inrush current. Each circuit can be set to power on during the Mid-Peak period and can be overridden by the user for 1-hour or until the next lower cost period.
- Includes internal logic to maximize the user's savings by using the Mid-Peak period to top up the storage heaters on only the coldest days.
- Includes a "Technician" mode to lock-down key configuration settings and reduce customer calls.
- Based on the average outdoor temperature over the last 24-hours, the panel estimates the amount of heat required and ensures that the heaters are fully charged by 6am, 1-hour before the 7am end of the Off-Peak period. For example, if the heaters require a 4-hour charge, the heaters will begin charging 5-hours before the end of the Off-Peak period at 2pm reducing strain on the home's service capacity.
- Users can customize and maximize their savings based on their lifestyle by selecting the outdoor temperature to begin charging the units for spring and fall.
- The NEMA type-1 indoor panel dimensions are 12" x 9¼" x 4".

Manual Charge Control Option (for single heater installations only)

Every Dimplex storage heater has manual charge control functionality built in. To use this option instead of the DCP2010 automatic charge control, the top plug must be removed from the panel on the heater's right-hand side and the supplied knob must be installed.

The manual charge control option allows the homeowner to manually decide how much heat energy to store during the Off-Peak period.

No charge (off) is the zero setting (▼) while a full charge for those coldest days in January and February would be a three (III). The typical winter setting is two (II), spring and fall is typically set at one (I).



In this scenario, the storage heater is wired to the NS Power meter via a relay and transformer to control the timing of the Off-Peak charging. Because the NS Power meter contact does not switch during the Mid-Peak period, this period can not be used to add additional charging and **therefore the storage heater must be sized based on an 8+0 scenario**.

For more detailed information, please contact Dimplex at ets@dimplex.com for an electronic copy of **Dimplex's VFMQ ETS Control Options and Wiring Manual**.

ZHI Auxiliary Elements — Direct Acting for Seasonal Cold Snaps

For those infrequent cool days during the summer, spring and fall when you don't want to run your storage heating system, Dimplex offers an auxiliary element that can be added to the VFMQ heater for spot heating.

The element works like a traditional electric heating element and requires the RTEV99 internal thermostat option to function. The RTEV99 thermostat is shown on the next page.

Catalogue Number	Description
ZHI050E	500 W Auxiliary Element for VFMQ20
ZHI070E	700 W Auxiliary Element for VFMQ30-70
ZHI110E	1.1 kW Auxiliary Element for VFMQ40-70
ZHI200E	2.0 kW Auxiliary Element for VFMQ50-70

To power the auxiliary element, both buttons on the RTEV99 must be turned on and when the RTEV99 thermostat sees a requirement for heat, the VFMQ's internal fan will blow air across the activated element to heat the area. The auxiliary element can be activated at any time including Peak periods.

As an operating cost savings feature, the element will only turn on if the storage core is less than 25% of its full capacity.

Please Note. The amperage of the direct elements needs to be added to the storage elements to find the correct wire and breaker size.



Note. The element is shown without the grill for illustrative purposes.

Thermostat Options

Thermostats are extra to the VFMQ heaters and two types are available:

- RTEV99 internal thermostat.
- TS521W wall thermostat and must include an inline fuse (240 volts / 15 Amps) on each leg.
An example from Littelfuse:
 - 2 x #LFR250301S fuse blocks that can connect #8 - #14 gauge wire.
 - 2 x #FLNR-015 fuses.



Internal Thermostat – RTEV99



Wall Thermostat - TS521W

BKOI25 Riser Feet

Provides 4 inches (10cm) of clearance and can be used in areas with long shag carpets or where there's a benefit to accessing or cleaning under the heaters like in schools or hospitals.

- Colour is birch-grey.
- Two feet to a BKOI25 set.

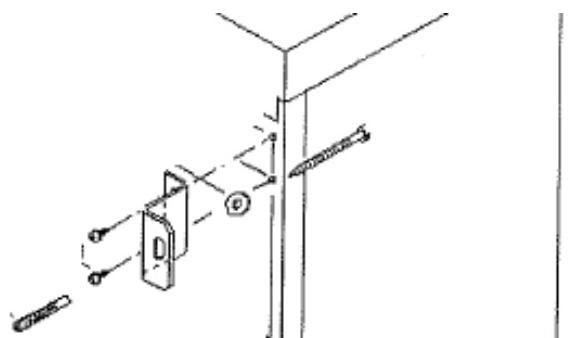


EZ-ZW1 Optional Mounting Bracket

In circumstances such as:

- uneven floors;
- applications that require additional security;

Dimplex offers an optional mounting bracket that can be attached to the left-hand side of the VFMQ storage heater. This can be retrofitted to an installed heater assuming some clearance.



UPLI Base Plates

Base plates are available to help protect uneven or delicate vinyl flooring or carpeting.

They are sized based on the heater and sit under the heater.



VFMQ20	UPLI20
VFMQ30	UPLI30
VFMQ40	UPLI40
VFMQ50	UPLI50
VFMQ60	UPLI60
VFMQ70	UPLI70

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Dealer Responsibilities and After-Sales Service

The Dealer is:

- required to supply one-year labour warranty with all installations and cost for this in their quote.
- responsible for all after-sales service related matters and provide 24-hour service on all Dimplex storage heating products.
- responsible for educating the customer about the correct working of the equipment, controls' operation with the NS Power Time-Of-Day program and comfort concerns.
- required to:
 - call NS Power to request a scope for the specified kW load at (800) 428-6774.
 - fill out NS Power's "Residential Time-Of-Day Rate Application" and direct the customer to forward this to NS Power ASAP. They are available online or through NS Power (800) 428-6774.
 - fill out the DCP2010 Control Settings for the customer's files.



Dimplex Warranty and Technical Support

Dimplex's limited warranty from the first purchase date is:

- 5 years for the VFMQ storage heater consisting of cabinet, elements and bricks.
- 3 years for the TOD Charge Control Panel and other storage heating accessories.

In addition to in-person and online training, Dimplex Dealers have access to Dimplex's Technical Support Team with direct escalation to our Solutions Manager for onsite questions to ensure the job is completed right the first time without having to go back.

Technical Support Group: (888) 346-7539

Nova Scotia Power Customer Care Centre

1-800-428-6774

428-6774 (Halifax area)

Weekdays 8am to 8pm.

Saturdays 9am to 5pm.

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Dimplex Sizing Template

- This quick method for heater selection is for a typical family home.
- Sizing for a home with an unusual amount of glass area should be done using a calculated heat loss.

Table 1 – Losses for Construction Type:	Watts per ft ²
Excellent (R-2000) No Table 2 addition necessary except ceiling height	5
Good (Insulation 6" walls, 10" ceilings, double pane windows)	6
Average (Insulation 4" walls, 8" ceilings, double pane windows)	7
Below Average (Insulation 4" walls, 6" ceilings, double pane windows)	8
Poor (Insulation 4" walls, 6" ceilings, single pane windows)	9

Table 2 – Select Losses for Ventilators / Air Exchangers	Watts per ft ²
No Ventilator	0
Ventilator, with heat recovery	1
Ventilator, no heat recovery	2

Table 3 – Ceiling Height	
Ceiling Height	Heat Loss Multiplier
8"	1.0
10'	1.25
12'	1.5
14'	1.75
16'	2.0

Table 4 - Choosing the Heater based on the Maximum Maintainable Heat Loss (kW)		
Heater Model	Automatic Charge Control NSPi (8+4)	Manual Charge Control (8+0)
VFMQ20	1.1 - 1.4	0.8 - 0.9
VFMQ30	1.7 - 2.1	1.2 - 1.4
VFMQ40	2.1 - 2.7	1.6 - 1.8
VFMQ50	2.8 - 3.7	2.1 - 2.3
VFMQ60	3.4 - 4.3	2.5 - 2.7
VFMQ70	3.8 - 4.7	2.8 - 3.1

Heater Sizing Example

1. Room Name: Basement
2. Room Length: 25 feet
3. Room Width: 20 feet
4. Ceiling Height: 8 feet
5. Area Square Footage: 500 sq. ft.
(Multiply line 2 x line 3)
6. Select watts per ft² from Table 1: 7 (Avg)
7. Select watts per ft² from Table 2: 0 (No Vent)
8. Add lines 6 & 7: 7 (7 + 0)
9. Multiply line 5 x line 8: 3,500 (500 x 7)
10. Ceiling Height from Table 3: 1 (8')
11. Heat Loss in Watts: 3,500 (3,500 x 1)
(Multiply line 9 x line 10)
12. Select Heater from Table 4: **VFMQ50**

1. Room Name: _____
2. Room Length: _____
3. Room Width: _____
4. Ceiling Height: _____
5. Area Square Footage:
(Multiply line 2 x line 3): _____
6. Select watts per ft² from Table 1: _____
7. Select watts per ft² from Table 2: _____
8. Add lines 6 & 7: _____
9. Multiply line 5 x line 8: _____
10. Ceiling Height from Table 3: _____
11. Heat Loss in Watts:
(Multiply line 9 x line 10) _____
12. Select Heater from Table 4: _____

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